

CLAIMS

What is claimed is:

1. A vacuum cleaner comprising:

a housing defining a cyclonic airflow chamber for separating contaminants from a dirt-containing airstream, said housing further comprising a cyclonic chamber inlet and an airstream outlet in fluid communication with said cyclonic airflow chamber;

a nozzle housing including a suction opening, said suction opening being fluidly connected with said cyclonic chamber inlet ;

an airstream suction source fluidly connected to said suction opening and to the cyclonic airflow chamber for transporting dirt-containing air from the suction opening to the cyclonic airflow chamber, said suction source is adapted to establish and maintain a dirt-containing airstream from said suction opening to and through said cyclonic chamber and through the airstream outlet ;

a dirt-collecting bin mounted to the housing adjacent said cyclonic airflow chamber and in communication therewith to receive dirt separated from the airstream in the cyclonic airflow chamber ;

a hollow standpipe extending through the dirt-collecting bin , in communication with the airstream outlet of the cyclonic airflow chamber and extending through a wall in the dirt collecting bin ; and

a filter chamber mounted to the dirt-collecting bin has an inlet opening in communication with the standpipe to remove fine particles from the airstream that passes through the airstream outlet in the cyclonic airflow chamber .

2. A vacuum cleaner according to claim 1 wherein the filter chamber and the dirt-collecting bin are removably mounted to the housing for selective removal therefrom.

3. A vacuum cleaner according to claim 2 wherein the filter chamber is integral with the dirt-collecting bin whereby both the dirt-collecting bin and filter chamber are selectively removable together from the housing.
4. A vacuum cleaner according to claim 1 and further comprising a separator plate between the cyclonic airflow chamber and the dirt-collecting bin and separating the cyclonic airflow chamber from the dirt-collecting bin , the separator plate having a diameter less than a diameter of the cyclonic airflow chamber adjacent the separator plate (34) to thereby define a gap between the separator plate and the cyclonic airflow chamber for passage of dirt separated from the dirt-containing airstream in the cyclonic airflow chamber .
5. A vacuum cleaner according to claim 1 wherein the dirt-collecting bin is below the cyclonic airflow chamber .
6. A vacuum cleaner according to claim 1 wherein the dirt-collecting bin wall is positioned in a lower portion of the dirt-collecting bin .
7. A vacuum cleaner according to claim 1 wherein the standpipe is centrally located in the dirt-collecting bin .
8. A vacuum cleaner according to claim 1 wherein the airstream suction source is positioned in the housing below the filter chamber and has an inlet opening in communication with the filter chamber to draw the airstream through the filter chamber .
9. A vacuum cleaner according to claim 1 wherein the filter chamber includes a filter that is removably mounted within the filter chamber .
10. A vacuum cleaner according to claim 9 wherein the removable filter is cylindrical and the airstream passes radially through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber.
11. A vacuum cleaner according to claim 10 wherein the cylindrical filter comprises at least one of a foam filter and a pleated filter.

12. A vacuum cleaner according to claim 1 wherein the filter is cylindrical and the airstream passes through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber .
13. A vacuum cleaner according to claim 12 wherein the cylindrical filter is a foam filter.
14. A vacuum cleaner according to claim 13 wherein the airstream passes axially through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber .
15. A cyclone separator module comprising:
- a housing defining a cyclonic airflow chamber for separating contaminants from a dirt-containing airstream, said housing further comprising a cyclonic chamber inlet and an airstream outlet in fluid communication with said cyclonic airflow chamber;
 - a dirt-collecting bin mounted to the housing adjacent said cyclonic airflow chamber and in communication therewith to receive dirt separated from the airstream in the cyclonic airflow chamber;
 - a hollow standpipe extending through the dirt-collecting bin , in communication with the airstream outlet of the cyclonic airflow chamber and extending through a wall in the dirt collecting bin; and
 - a filter chamber mounted to the dirt-collecting bin including an inlet opening in communication with the standpipe to remove fine particles from the airstream that passes through the airstream outlet in the cyclonic airflow chamber.
16. A cyclone separator module according to claim 15 wherein the filter chamber and the dirt-collecting bin are removably mounted to the housing (14) for selective removal therefrom.

17. A cyclone separator module according to claim 16 wherein the filter chamber is integral with the dirt-collecting bin whereby both the dirt-collecting bin and filter chamber are selectively removable together from the housing (14).
18. A cyclone separator module according to claim 15 and further comprising a separator plate (34) between the cyclonic airflow chamber and the dirt-collecting bin and separating the cyclonic airflow chamber from the dirt-collecting bin , the separator plate (34) having a diameter less than a diameter of the cyclonic airflow chamber adjacent the separator plate (34) to thereby define a gap between the separator plate (34) and the cyclonic airflow chamber for passage of dirt separated from the dirt-containing airstream in the cyclonic airflow chamber .
19. A cyclone separator module according to claim 15 wherein the dirt-collecting bin is below the cyclonic airflow chamber .
20. A cyclone separator module according to claim 15 wherein the dirt-collecting bin wall is positioned in a lower portion of the dirt-collecting bin .
21. A cyclone separator module according to claim 15 wherein the standpipe is centrally located in the dirt-collecting bin .
22. A cyclone separator module according to claim 15 wherein the filter chamber has an outlet opening adapted to be in communication with a suction source .
23. A cyclone separator module according to claim 15 wherein the filter chamber includes a filter that is removably mounted within the filter chamber .
24. A cyclone separator module according to claim 15 wherein the removable filter is cylindrical and the airstream passes radially through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber .
25. A cyclone separator module according to claim 24 wherein the cylindrical filter comprises at least one of a foam filter and a pleated filter.

26. A cyclone separator module according to claim 15 wherein the filter is cylindrical and the airstream passes through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber .

27. A cyclone separator module according to claim 26 wherein the cylindrical filter is a foam filter.

28. A vacuum cleaner according to claim 27 wherein the airstream passes axially through the cylindrical filter between the inlet opening in the filter chamber and an outlet opening in the filter chamber.